

WHAT IS CLAIMED IS:

1. A network device configured to control communication of data frames between stations, comprising:

a plurality of input ports configured to receive data frames from the stations;

a plurality of output ports configured to transmit the data frames to their intended

5 destinations;

data frame processing logic configured to identify data forwarding information for the received data frames, the data forwarding information identifying at least a first one of the output ports; and

10 a plurality of output queues corresponding to the plurality of output ports, each of the plurality of output queues being configured to store data forwarding information associated with the received data frames, wherein each of the plurality of output queues includes a configurable number of portions corresponding to priorities associated with the received data frames.

2. The network device of claim 1, wherein the data frame processing logic is further configured to:

determine a priority associated with each of the received data frames, and

store data forwarding information for a first one of the received data frames in at least

5 one of the plurality of output queues, the data forwarding information being stored in the portion of the at least one output queue corresponding to the priority associated with the first data frame.

3. The network device of claim 1, wherein the plurality of output queues comprises a first group of output queues, the network device further comprising:

a second group of output queues corresponding to the first group, and

wherein data forwarding information associated with a first data frame stored in a

5 first one of the output queues in the first group is transferred to a first output queue in the

second group corresponding to the first output queue in the first group, the data forwarding information being stored in a portion of the first output queue in the first and second groups based on a priority associated with the first data frame.

4. The network device of claim 3, further comprising:

an overflow engine configured to transfer data forwarding information associated with the first data frame to an external memory, when the portion of the first output queue in the second group is full.

5. The network device of claim 1, further comprising:

a register configured to store information indicating a number of entries that may be stored in each of the number of portions of each of the plurality of output queues.

6. The network device of claim 5, wherein the number of entries is programmable.

7. The network device of claim 5, wherein the register includes a plurality of entries corresponding to priority levels and when the contents of an entry in the register are zero, the network device does not support a priority level associated with the entry.

8. The network device of claim 1, wherein each of the plurality of output queues comprises a random access memory and the configurable number of portions is sixteen.

9. In a network device that controls communication of data frames between stations, a method comprising:

receiving a data frame on a first one of a plurality of input ports;

identifying data forwarding information for the data frame, the data forwarding  
 5 information identifying at least a first output port;

generating a forwarding descriptor for the data frame, the forwarding descriptor  
 including a frame pointer that identifies a location in external memory where the data frame is  
 stored and a priority associated with the data frame; and

storing at least a part of the forwarding descriptor in a portion of a first one of a plurality  
 10 of output queues based on the priority associated with the data frame, each of the plurality of  
 output queues having a configurable number of portions.

10. The method of claim 9, wherein the plurality of output queues corresponds to a  
 plurality of output ports on the network device, the method further comprising:

programming a number of entries that may be stored in each of the configurable number  
 of portions of each of the plurality of output queues in a register, the number of portions  
 corresponding to priorities supported by the network device.

11. The method of claim 10, wherein the storing at least part of the forwarding  
 descriptor includes:

storing the frame pointer in the portion of the first output queue corresponding to the  
 priority associated with the data frame.

12. The method of claim 10, wherein the programming a number of entries includes:  
 programming the number of entries corresponding to a priority not supported by the  
 network device to zero.

13. The method of claim 9, further comprising:

transferring the part of the forwarding descriptor from the first output queue

to a transmit buffer;

retrieving a data frame identified by the frame pointer from external memory;

5 storing the data frame in the transmit buffer; and

forwarding the data frame via the first output port.

14. A network device configured to control communication of data frames between stations, comprising:

a plurality of input ports configured to receive data frames from the stations;

a plurality of output ports configured to transmit the data frames to their intended

5 destinations;

a plurality of output queues corresponding to the plurality of output ports, each of the plurality of output queues being configured to include a number of portions corresponding to priorities associated with the received data frames and to store information associated with the received data frames;

10 a register configured to store information indicating a number of entries that may be stored in each of the number of portions of each of the plurality of output queues; and

processing logic configured to:

receive frame header information for a first data frame,

identify data forwarding information for the first data frame, the data

15 forwarding information identifying at least a first one of the output ports,

generate a forwarding descriptor associated with the first data frame, the forwarding descriptor including a priority associated with the first data frame, and

store at least a part of the forwarding descriptor in a first one of the output queues, the part of the forwarding descriptor being stored in the portion of the first output

20 queue corresponding to the priority associated with the first data frame.

15. The network device of claim 14, further comprising:

a plurality of transmit modules corresponding to the plurality of output ports, each of the plurality of transmit modules being configured to:

transfer the part of the forwarding descriptor from the first output

5 queue to a transmit buffer,

retrieve a data frame associated with the forwarding descriptor from an external memory,

store the data frame in the transmit buffer, and

transmit the data frame via the first output port.

16. The network device of claim 14, wherein the plurality of output queues comprises a first group of output queues and a second group of output corresponding to the first group, the first output queue being included in the first group, and

wherein the part of the forwarding descriptor associated with the first data  
5 frame stored in the first output queue in the first group is transferred to a first output queue in the second group, the part of the forwarding descriptor being stored in a portion of the first output queue in the second group based on a priority associated with the first data frame.

17. The network device of claim 14, wherein the number of entries is programmable.

18. The network device of claim 14, wherein the number of portions is programmable.

19. The network device of claim 14, wherein when the contents of an entry in the register are zero, the network device does not support a priority associated with the entry.